OET-related Awards

- 19 OET-related Awards since 1991
- $163.4 M total R&D
  - **$83.7 M industry**
    $79.7 M ATP
- Involving
  - 35 companies
  - 2 industry consortia
  - 3 universities
  - 1 gov't laboratory
  - plus subcontractors

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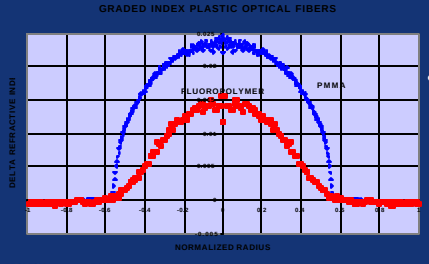
What is Organic Electronics

- Innovative organic materials and process technologies for future electrical / optical devices or components that participate in or are essential to the functions that occur within electrical or optical systems
- Functions include:
  - imaging or patterning, logic, memory, interconnection, power or sources, display or illumination, field protection or confinement, sensing, actuating, etc.



- Supports … ◪ microelectronics and photonics manufacturing; ◪ power technologies; ◪ large-area-, disposable-, and molecular-electronics; ◪ MEMS; ◪ smart structures, and; ◪ trends towards broader integration of functions within electrical/optical systems

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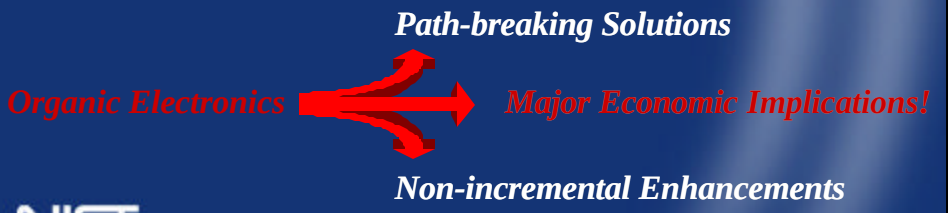
ATP's Interests in Organic Electronics

- Partner with American companies
- Tackle high technical risk problems that impede the utilization of superior performance organic electronics technologies within commercial products.
- Concentrate on market opportunities and R&D problems central to future U.S. economic growth.



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Atlanta Results

FALL 1998 • ATLANTA

Organic Electronics Technologies Workshop
November 18, 1998
Sheraton Gateway Hotel, Atlanta, GA

- 60 Participants
  - 42 industry, 14 university, 2 consortia, 3 government
- Single vision for Organic Electronics
  - new electronics and manufacturing paradigm
  - requires a new manufacturing infrastructure
  - special emphasis on pathways for reduced cost
  - achieve U.S. global competitiveness

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Atlanta Results

Diverse array of possibilities

- Conducting devices
  - transistors, interconnects
- Light emitting / transmitting devices
  - OLEDs , electronic paper, graded index fibers, waveguides
- Insulators / substrates
  - dielectrics, dimensionally stable substrates, templates
- Memory
  - holography, controlling magnetic domains
- Imaging
  - resists, non-resist patterning

Possible Applications

- Displays
- Optical interconnection
- Disposable electronics
- Lighting
- Electronics Manufacturing

Atlanta Results

Highest priority endeavors ...

- Continuous manufacturing processes and equipment
- Improved materials compatibility, reliability, and performance
- Product-driven vertically integrated teams

… that exploit unique OET characteristics

- Low cost
- Flexibility
- Low temperature processing
- Large area
- Low initial investments
- 3D forming

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Atlanta Results

Some Examples of OET Opportunities

Path-breaking Solutions

- *Low cost electronics on flexible substrates*
  - thin film transistors
  - organic displays

Non-incremental Enhancements

- *Materials for existing electronics technologies*
  - Low / High 5 dielectrics
  - Embedded passives
  - Polymer optical fibers

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How can ATP Help?

- Provide ATP decision support capability to industry
  - Support industry's quest to identify and capitalize on the right opportunities
  - Supplement industry's understanding of future opportunities and technology priorities by involving a broad spectrum of parties
  - Continuously challenge industry to demonstrate leadership

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Industry Leadership

ADVANCED TECHNOLOGY PROGRAM

National Technology Roadmap for Semiconductors

OIDA

NATIONAL ELECTRONICS MANUFACTURING TECHNOLOGY ROADMAPS

Identification of market opportunities and technology gaps

Development of high quality proposals

USDC

SEMI

ATP Partnerships that Bridge the Gap between the Laboratory and the Marketplace